

NETLink lite

Ethernet Gateway for MPI/PROFIBUS

User Manual

Edition 2 / 13.09.2005

HW 1 & SW 1.04 and higher



Order numbers: 700-880-MPI01 and 700-880-MPI02I

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Note:

We have checked the content of this manual for conformity with the hardware and software described. Nevertheless, because deviations cannot be ruled out, we cannot accept any liability for complete conformity. The data in this manual have been checked regularly and any necessary corrections will be included in subsequent editions. We always welcome suggestions for improvement.

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1 Safety information

Please observe the safety information given for your own and other people's safety. The safety information indicates possible hazards and provides information about how you can avoid hazardous situations.

The following symbols are used in this manual.



Caution, indicates hazards and sources of error



gives information



hazard, general or specific



danger of electric shock

1.1 General

The NETLink lite is only used as part of a complete system.



The operator of a machine system is responsible for observing all safety and accident prevention regulations applicable to the application in question.



During configuration, safety and accident prevention rules specific to the application must be observed.



Emergency OFF facilities according to EN 60204 / IEC 204 must remain active in all modes of the machine system. The system must not enter an undefined restart.



Faults occurring in the machine system that can cause damage to property or injury to persons must be prevented by additional external equipment. Such equipment must also ensure entry into a safe state in the event of a fault. Such equipment includes electromechanical safety buttons, mechanical interlocks, etc. (see EN 954-1, risk estimation).



Never execute or initiate safety-related functions using an operator terminal.



Only authorized persons must have access to the modules!

1.2 Restriction of access

The modules are open equipment and must only be installed in electrical equipment rooms, cabinets, or housings. Access to the electrical equipment rooms, barriers, or housings must only be possible using a tool or key and only permitted to personnel having received instruction or authorization.

2 Information for the user



During configuration, safety and accident prevention rules specific to the application must be observed.

This manual is addressed to anyone wishing to configure, use, or install the NETLink lite.

The manual tells the user how to operate the NETLink lite and explains the signaling functions. It provides the installing technician with all the necessary data.

The NETLink lite is exclusively for use with a S7-300/S7-400 programmable controller from Siemens.

The NETLink lite is for use within a complete system only. For that reason, the configuring engineer, user, and installing technician must observe the standards, safety and accident prevention rules applicable in the particular application. The operator of the automation system is responsible for observing these rules.

2.1 Use as intended

The NETLink lite must only be used as a communication and signaling system as described in the manual.



Make sure in the software that uncontrolled restarts cannot occur.

2.2 Avoiding use not as intended!

Safety-related functions must not be controlled via the NETLink lite alone. Make sure in the software that uncontrolled restarts cannot occur. The module must be operated at the appropriate slots with a 24 V power supply.



Before you start installation work, all system components must be disconnected from their power source.

2.3 Installation and mounting

Installation and mounting must be effected in compliance with VDE 0100 / IEC 364. Because it is an IP20 (OPEN type) module, you must install it in a cabinet.

Ambient temperature: 0 °C – 50 °C.

3 Installation of the driver

3.1 Introduction

With the NETLink lite driver for the NETLink lite, you can easily program controllers via a network using TCP/IP. Status operation is also possible via the NETLink lite driver.

The NETLink lite driver can be used in conjunction with Simatic® STEP®7. The NetLink driver also permits direct access via variables, e.g. from WinCC®.

Access to the following controllers is possible via the NETLink lite driver.

Any controllers of the Simatic® S7-300® or S7-400® series that are connected via a local area network or the Internet. To link a Simatic® S7-300® or S7-400® controller via the Ethernet network, you require the NETLink lite communication adapter.

3.2 System requirements

To operate the NETLink lite driver on the programming device side you require a PC with a 32-bit Windows operating system and an installed version of Simatic® STEP®7, Version 5.1 or higher. On the programming device, the Windows 2000® Windows XP® operating systems can be used.

The installation on Windows 95/98/ME/NT is possible, however, isn't supported by our technical support. Please pay attention to the requirements of your STEP®7 package

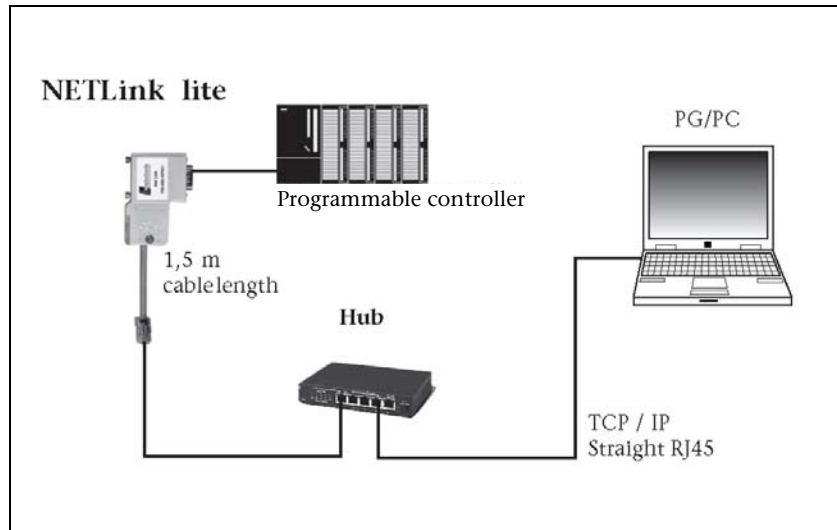
Connect the NETLink lite directly to the MPI or the Profibus interface of the Simatic® S7-300® or S7-400® controller if possible. If this is not possible in special cases, it may be necessary to provide a separate power supply to the NETLink lite communication adapter. (e.g. MPI/Profibus distributor as an accessory).

A functioning network link using TCP/IP must be set up on the PCs that are used. The network configurations of the PCs must be known. You can use normal commercial type network cards. In the local area network, 100 Mbit network cards and switches are used to obtain the best possible performance. Of course, you can also use 10 Mbit network cards and hubs but that would slow down status operation.

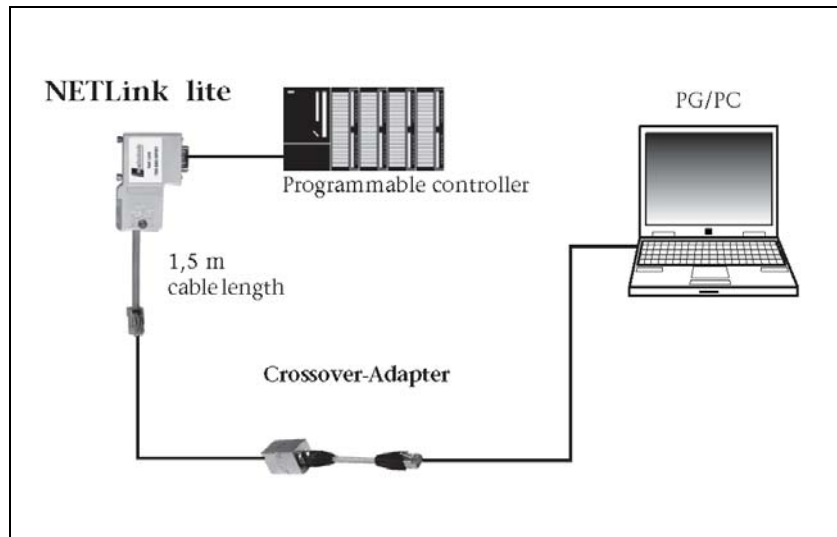
3.3 Getting started

Connect the NETLink lite to your PLC as shown in the two illustrations.

The NETLink lite is usually connected to the programming device via a hub/switch.



Direct connection of the NETLink lite to a programming device is only possible with a cross-over adapter (available as accessory).



After you have plugged the NETLink lite onto the MPI interface of the programmable controller, the green LED on the NETLink lite housing should be flashing (unparameterized NETLink lite) or continuously on (parameterized NETLink lite). If this is not the case, the 24 volt power supply to the MPI interface or to the NETLink lite is defective.

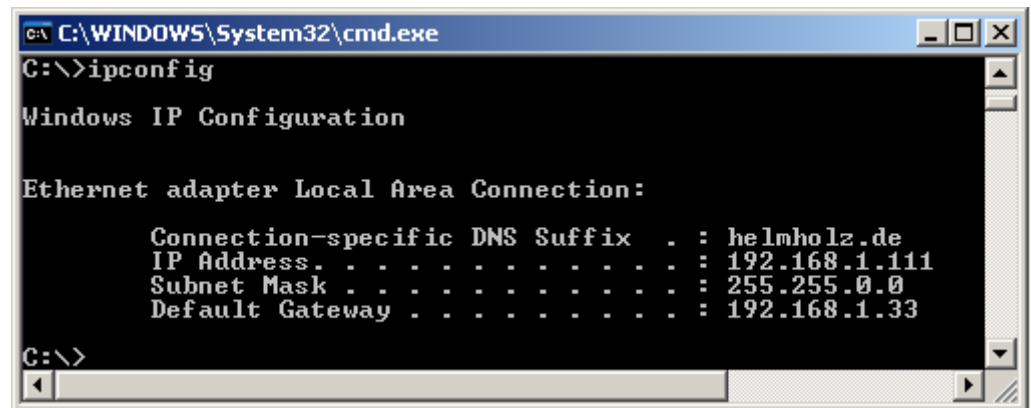
The yellow LED flashes cyclically if a network is detected, (flashing frequency depends on data traffic in the TCP/IP network).



Red LED continuously lit indicates a defect in the NetLink.

If the yellow LED is inactive, the TCP/IP link from host to host is not a cross-over cable or it has been broken for another reason (defective hub, network card, cable, connectors, etc.).

To check your network settings or function, look at your connection settings using the < ipconfig > command at the DOS prompt.



```
C:\WINDOWS\System32\cmd.exe
C:\>ipconfig

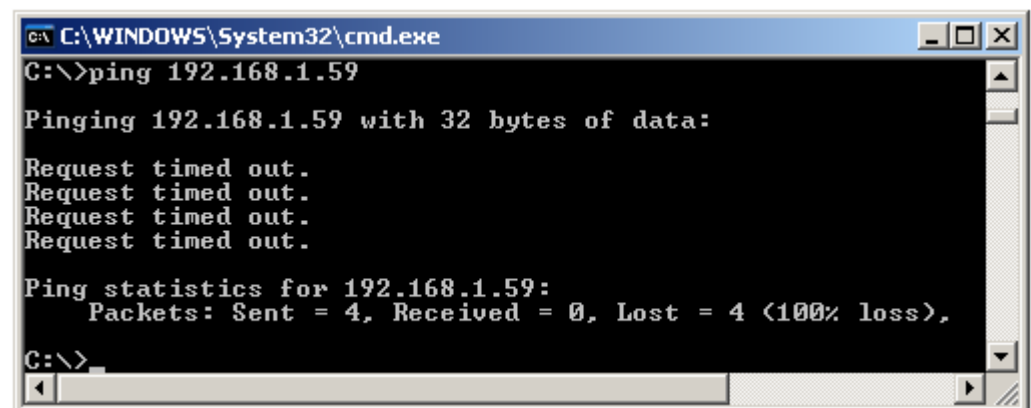
Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : helmholz.de
    IP Address. . . . .               : 192.168.1.111
    Subnet Mask . . . . .             : 255.255.0.0
    Default Gateway . . . . .         : 192.168.1.33

C:\>
```

To make sure that the IP address that you want to assign to the NETLink lite is still unassigned in your TCP/IP network, send a <ping "IP address">, as shown in the following example.



```
C:\WINDOWS\System32\cmd.exe
C:\>ping 192.168.1.59

Pinging 192.168.1.59 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.59:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

3.4 Installation

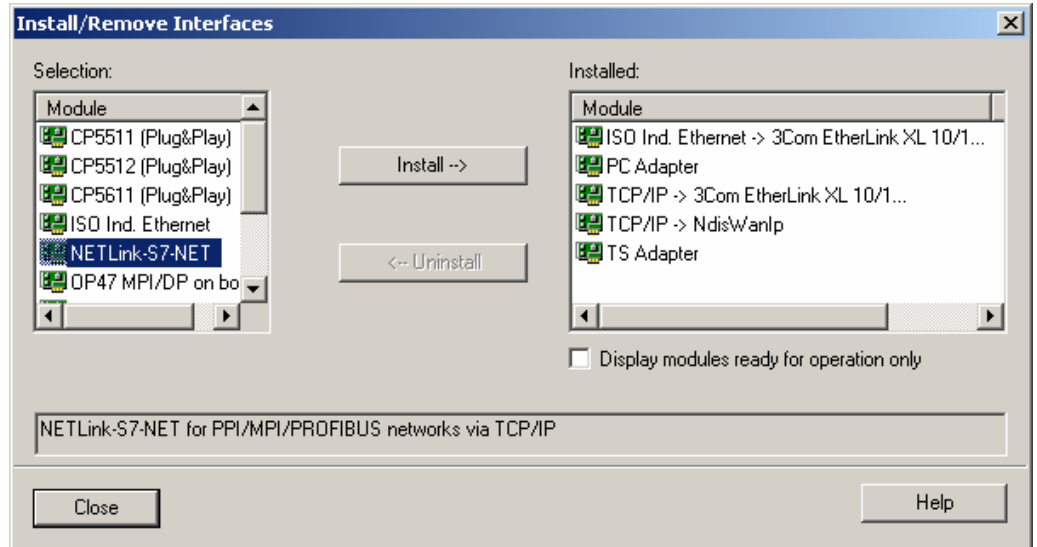
Please note that you have to log on as an administrator under the 32-bit Windows operating systems Windows 2000® and Windows XP® because the setup program has to make entries in the Windows registry.

Open the "Driver" directory on the NETLink lite CD and run "SetupSHS7NET.exe". Follow the instructions of the operator prompts.

If necessary you can download the newest NETLink lite driver from our homepage (<http://www.helmholz.de>).

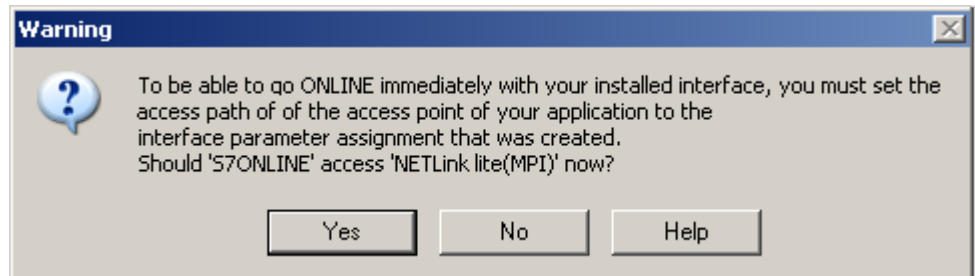
3.5 Selecting the PG/PC interface

After initial installation, the new interface parameter sets "NETLink-S7-NET" have to be set up. Administrator rights may be necessary for this action. Run "Set PG/PC interface" in the Control Panel. Click the "Select" button. This takes you to the "Install/Remove Interfaces" dialog box.



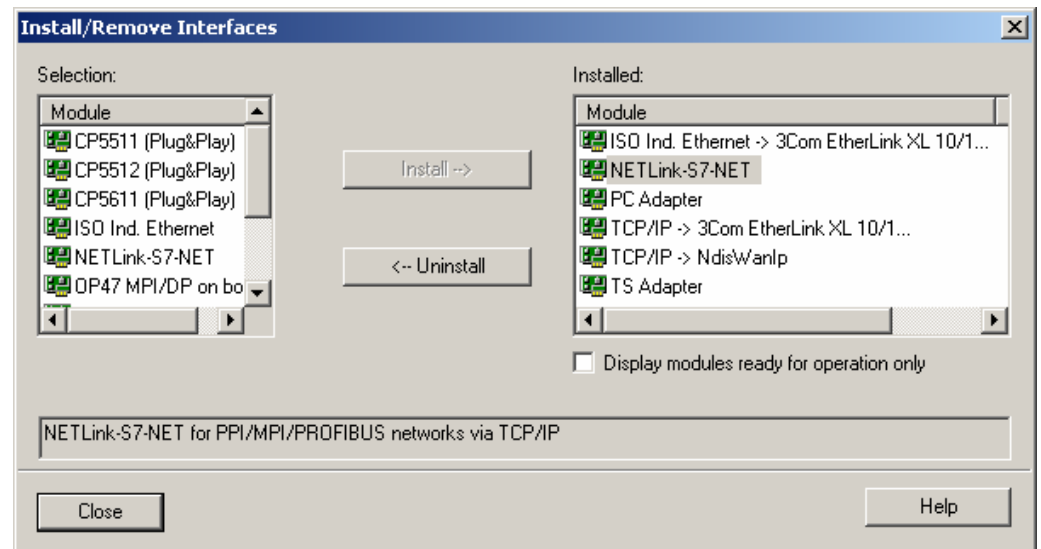
Now select the "NETLink-S7-NET" item in the left-hand list and then press the "Install" button.

The following query then appears.



If you answer this query with "Yes", the NETLink lite is immediately set as the current access path. If you respond "No", the previous access path remains set and the NETLink lite is put in the selection list where you can select it later.

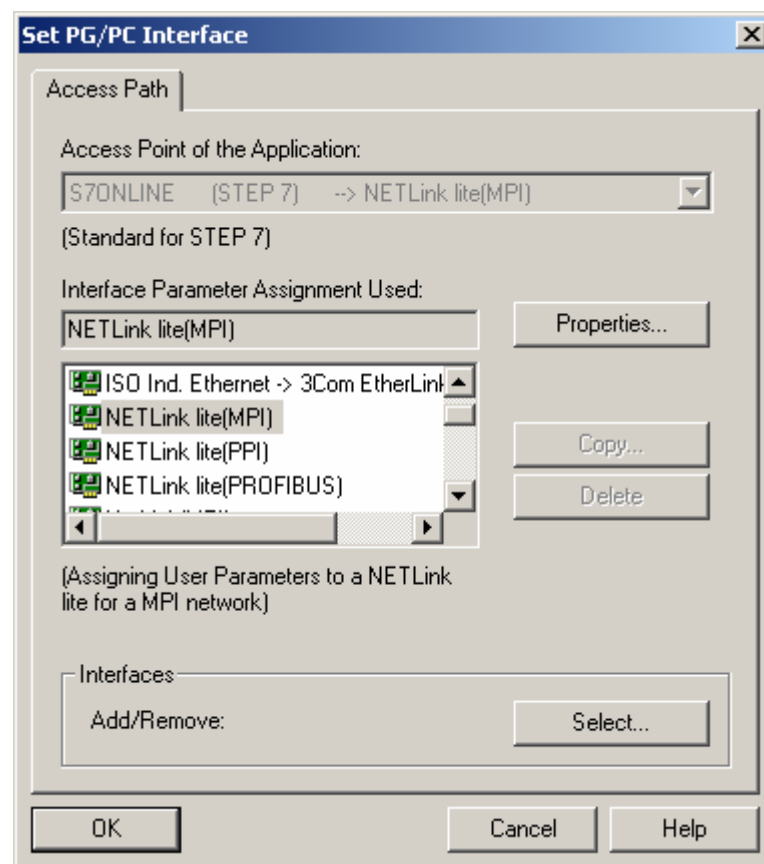
Now you have answered the query, "NETLink-S7-NET" will also appear in the right-hand list with the interfaces already installed.



Close this window to select the access path in the "Set PG/PC interface" dialog box.

The selection list for the interface parameter sets now contains an additional 3 items for the NETLink lite.

!
Parameterization for the PPI protocol has not yet been released!



The interface parameter sets for the PPI protocol are already entered but not yet enabled.

All relevant settings of a NETLink lite can be made via the "Properties" access field.

4 Connection modes

The NETLink lite can be used in all TCP/IP compliant networks, i.e. you can use it in local area networks (LANs, WLANs) and in large wide area networks (WANs).

4.1 Operation via local area network (LAN)

Before you can select the connected controller in the driver settings of the programming devices, the IP address of the connected NETLink lite must be known.

To make sure that the controller can be accessed by the programming device when setting up a new connection, first use the command *PING <IP address>* in a DOS box to make sure that your network link is working.

Port 1099 is currently used for communication.

If the computers are behind a firewall, the port for communication must be enabled in the firewall software.

Contact your network administrator or refer to the documentation of your firewall software.

4.2 Operation via internet (WAN)

Basically the same rules apply as are described in [Section 4.1](#).

Routing of IP telegrams from a local computer to a remote location (e.g. remote maintenance) usually requires the help of network administrator with a sound knowledge of the technical environment between the communication partners.

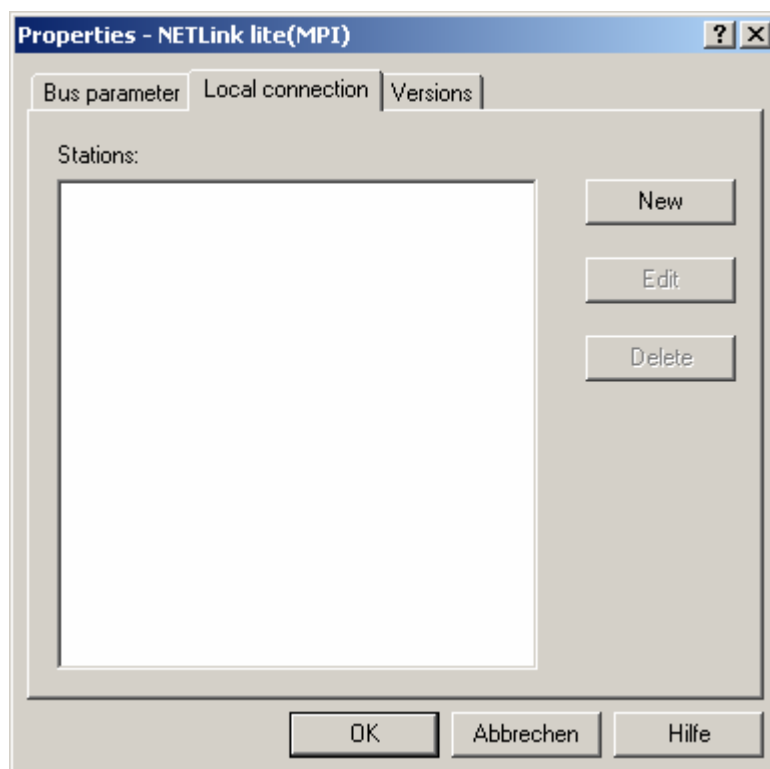
5 Configuring the NETLink lite

5.1 Setting the IP address

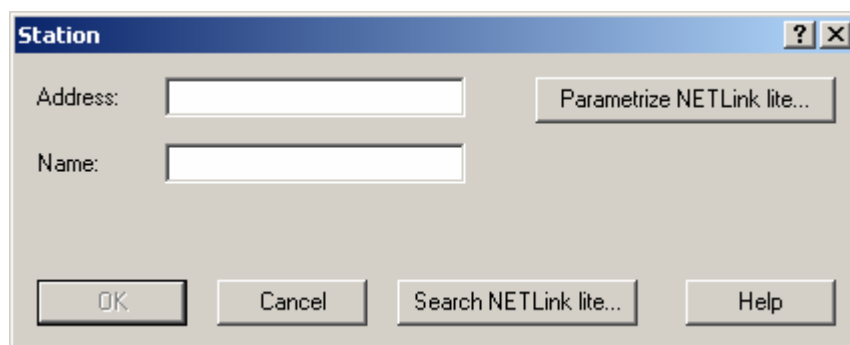
Before you can use a NETLink lite, an IP address must first be assigned. For this purpose, the NETLink lite must be connected ready for operation, as shown in ["Getting started"](#). Moreover, the NETLink lite must be connected in the same network segment as the PC from which configuration is performed.

Run *"Set PG/PC interface"* in the Control Panel or via the Simatic® Manager. Make sure that the NETLink lite is selected as the interface parameter set used ([see Selecting the PG/PC interface](#)).

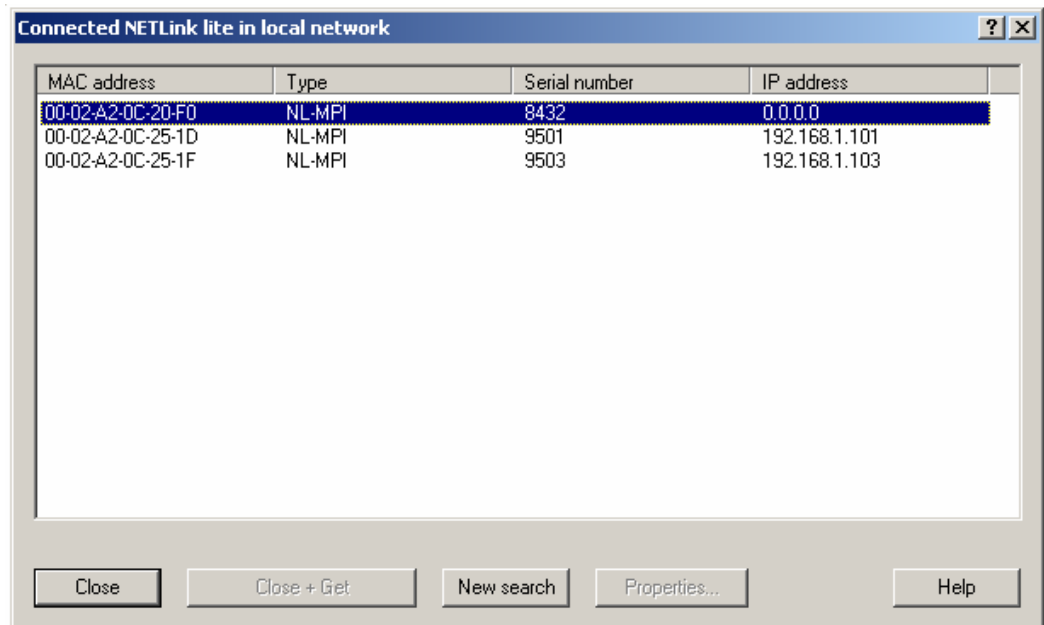
Click the *"Properties"* button. The *"Properties – NETLink lite(MPI)"* dialog box is displayed.



The list may already contain parameterized stations. Now click the *"New"* button. The input dialog box for a station opens.

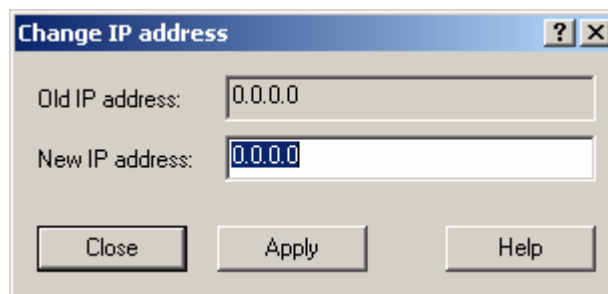


The *"Search NETLink lite..."* button finds and lists all NETLink lite units connected and ready for operation in the current network segment.



If more than one NETLink lite is displayed, the adapter can be identified via the serial number that is also to be found on the connector housing. If no IP address has been assigned yet, the address "0.0.0.0" (*as-delivered state*) will appear. Select the NETLink lite whose IP address is to be set and click the "Settings" button. Alternatively, you can double-click the item in the list.

The "Change IP address" dialog box opens.



Enter the IP address here that is to be assigned to the NETLink lite. If you click the "Apply" button, this IP address will initially be temporarily assigned to the NETLink lite.

To save the setting in the NETLink lite permanently, click the "Settings" button again.

Now the "NETLink lite properties" opens.

! If the properties window does not appear, NETLink lite is not in the same network segment (e.g. behind a router that does not let through the necessary broadcasts for the net scan). Check the network settings on your PC as described in the "Getting started" section!

The screenshot shows the "NETLink lite properties" dialog box. It is divided into three main sections. The top section, "Firmware", includes input fields for "Firmware file:", "File version:", and "NETLink lite version:" (which displays "MPI NL-MPI V01.021 24.04.02"). To the right of these fields are buttons for "Select firmware file...", "Load firmware", and "NETLink lite options...". The middle section, "IP address properties", contains input fields for "IP address:" (192.168.1.132), "Subnet mask:" (255.255.255.0), and "Gateway:" (0.0.0.0). The bottom section, "NETLink lite properties", includes input fields for "Own address:" (0), "Transmission rate:" (187.5 Kbps), "Highest Station Address:" (31), and "Profile:" (MPI). A "Bus parameters..." button is located to the right of the "Profile:" field. At the bottom of the dialog are three buttons: "Close", "Save in NETLink lite", and "Help".

This dialog box shows all the settings of the NETLink lite.

5.2 Firmware

The operating system version of the connected adapter is displayed in the "Firmware" dialog box. The latest operating system is always supplied as a backup. You can always bring NETLink lite up to date by clicking the "Select firmware file..." and "Load firmware" buttons.

5.3 TCP/IP settings

All values can be adapted, if necessary, in the "IP address properties" group box. Please note that these settings can only be changed within the first minute after start-up. If necessary, remove the NETlink lite from the MPI interface of your CPU to de-energize it. The NETlink lite is restarted if you plug it in again.

Please enter the address of any gateways (routers) there may be. If there is no gateway, just leave those fields empty.

5.4 Parameterization

Adjustments of the bus parameters are made in the "NETLink lite properties" group box.

Because the NETLink lite is a node in an MPI or PROFIBUS network, it must have its own address in the network. The default is address 0. On delivery, the programming devices have address 0, operator panels address 1, and CPUs address 2. On starting up NETLink lite make sure the addresses you use do not conflict.

5.4.1 MPI

Select the transmission rate of the MPI or PROFIBUS network. On transmission via MPI, you should select 187.5 kbps.

Set the highest node address and the bus profile (MPI/Profibus) correctly.

5.4.2 Profibus

If you want to use the NETLink lite on a Profibus system, you must state this in the bus profile selection. Please then also set the Profibus parameters to match the hardware configuration. Otherwise faults may occur on the bus.

If you are operating the NETLink lite on the Profibus, you must set it to the baudrate that is configured on the CPU for the Profibus.

For example, on a CPU315-2DP the default setting of the CPU is 1.5 Mbps. Always select the data transmission rate set on the CPU.

You can go to the Profibus parameters dialog box by clicking the "Bus parameters..." button.



Please take the Profibus parameters from the hardware profile of the connected CPU!

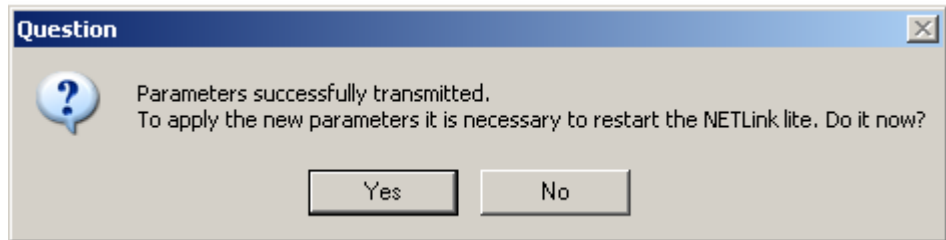
Tslot:	100	tBit
Max Tsd:	60	tBit
Min Tsd:	11	tBit
Tset:	1	tBit
Tqui:	0	tBit
Gap factor:	10	
Retry limit:	1	
Ttr:	25673	tBit

OK Cancel Help

Please use the Profibus parameters from your actual STEP®7 project.

The settings are then written retentively into the adapter with the "Save in NETLink lite" button

A query is displayed before the settings are applied.



To be able to use the changed values immediately, the NETLink lite must be started again, press the "Yes" button. Starting can take up to 15 seconds. During this time the red LED on the NETlink lite housing flashes.

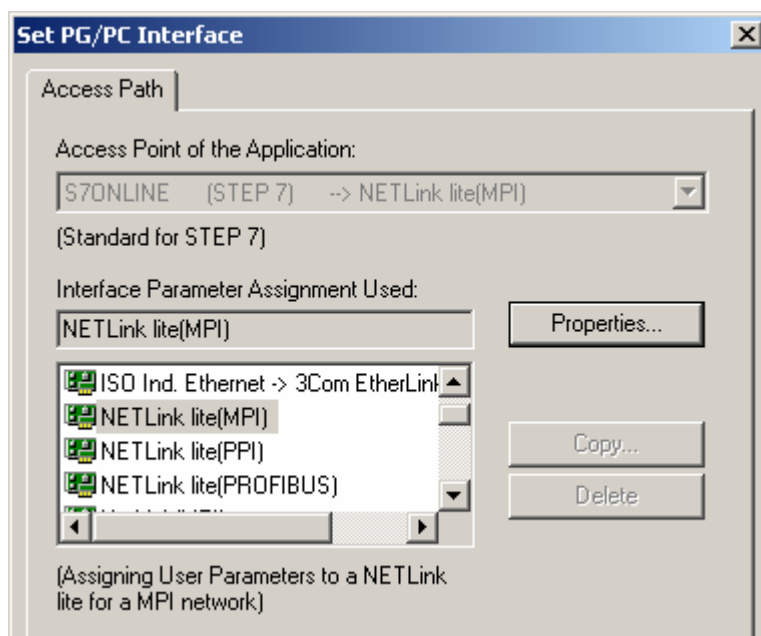
Basic configuration of the NETLink lite is now completed and open dialog boxes can be closed one after the other. If possible, use the "Close" or "OK" buttons for this purpose.

5.5 Definition of access names to identify controllers

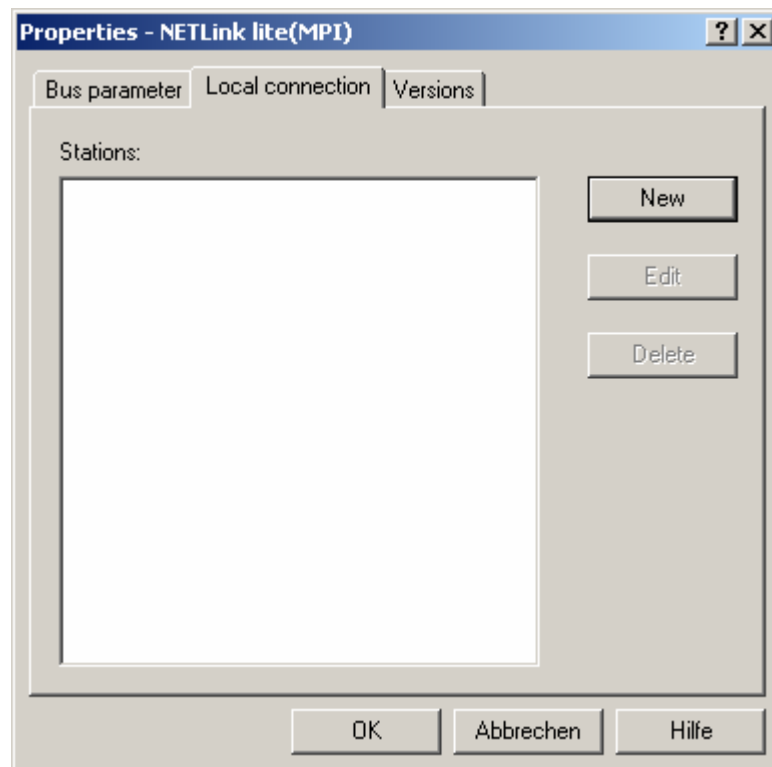
Each NETLink lite is represented by a station in the driver. A station consists of the IP address of the NETLink lite and a freely selectable name. You can parameterize up to 128 stations, of which only one can be used for online communication.

In the "Set PG/PC interface" dialog box, now select the interface parameter sets into which the NETLink lite is plugged (e.g. NETLink lite(MPI)).

Click the "Properties..." button.

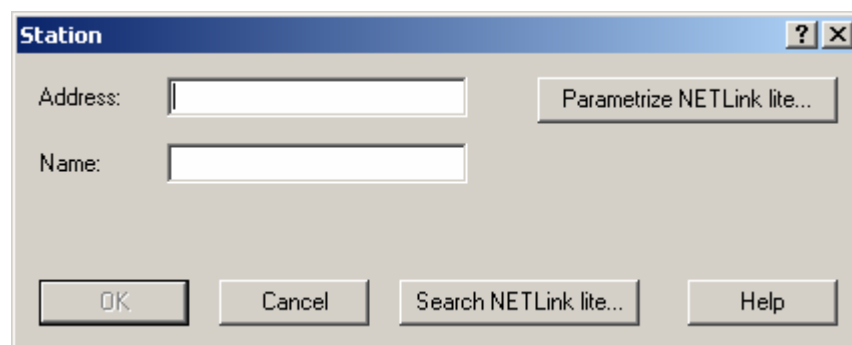


The "*Properties – NETLink lite(MPI)*" window opens.

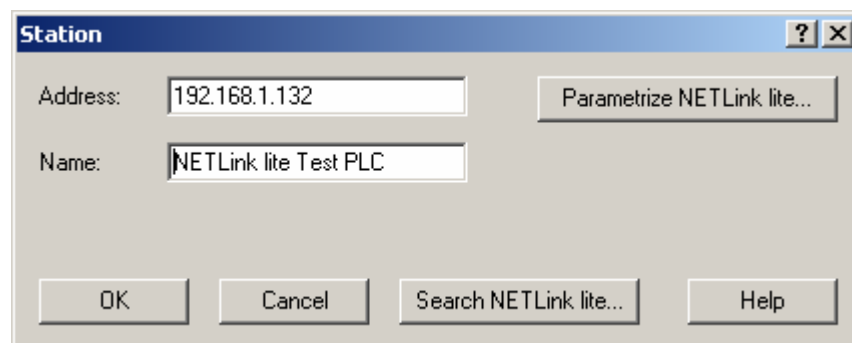


The "*Local connection*" properties tab card is shown. The list of stations is empty when opened for the first time. The "*New*" button creates a new station list item.

The "*Station*" dialog box opens.



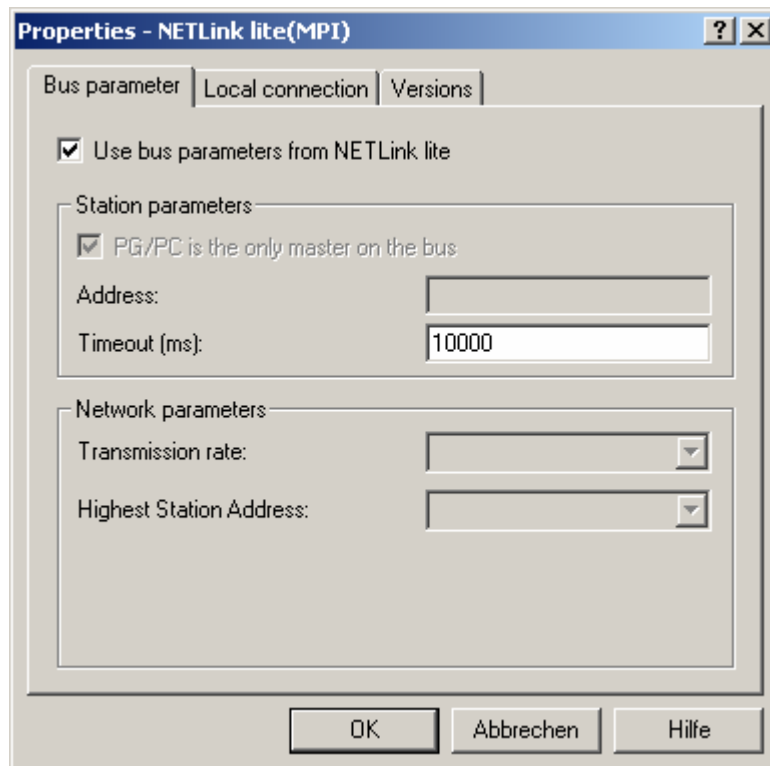
If the IP address is known, it can be entered directly. If the IP address is not known and the NETLink lite is connected in the current network segment, it is possible to determine the IP address with the "*Search NETLink lite...*" button.



The station must be given a meaningful name before this dialog box can be closed with the "*OK*" button.

5.6 Specific bus settings

General settings can be made on the "Bus parameter" properties tab card. These apply to the selected interface parameter sets, whatever station is currently selected.



It is generally advisable to set the bus parameters in the NETLink lite as required by the interface into which the NETLink lite is plugged, see ["Parameterization"](#). In particular, if the NETLink lite is plugged into a PROFIBUS interface that is being used for another data link. Otherwise, the NETLink lite might interfere with its bus communication. The "Use bus parameters from NETLink lite" switch causes the driver to rely on the bus setting in the NETLink lite being correct and it does not change them. This deactivates the associated settings. Now only the timeout value can be changed that is used to monitor the link.

! Any changes in this section are only temporary settings! After a powercycle are the old saved Bus parameters active!

If it does become necessary to make the bus settings here, just deselect the "Use bus parameters from NETLink lite" checkmark. Now the bus address for the NETLink lite must be adapted along with the transmission rate and the highest station address (HSA). Because these settings are transferred before each online communication with the NETLink lite, the timeout value should be increased to at least 15000 ms.

5.7 Querying a driver version

The "*Versions*" tab card contains information about the files belonging to the driver. This information is required for queries to support.

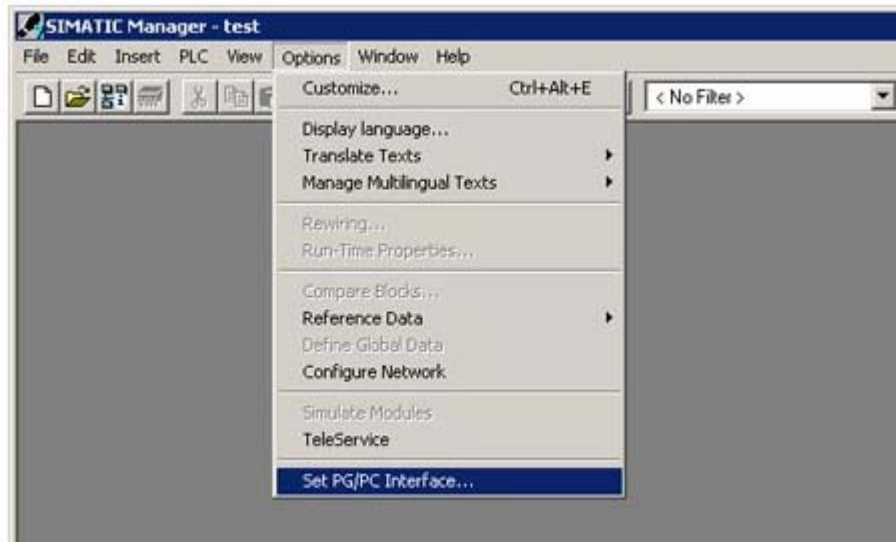
5.8 De-installation

To uninstall the driver, you proceed as follows:

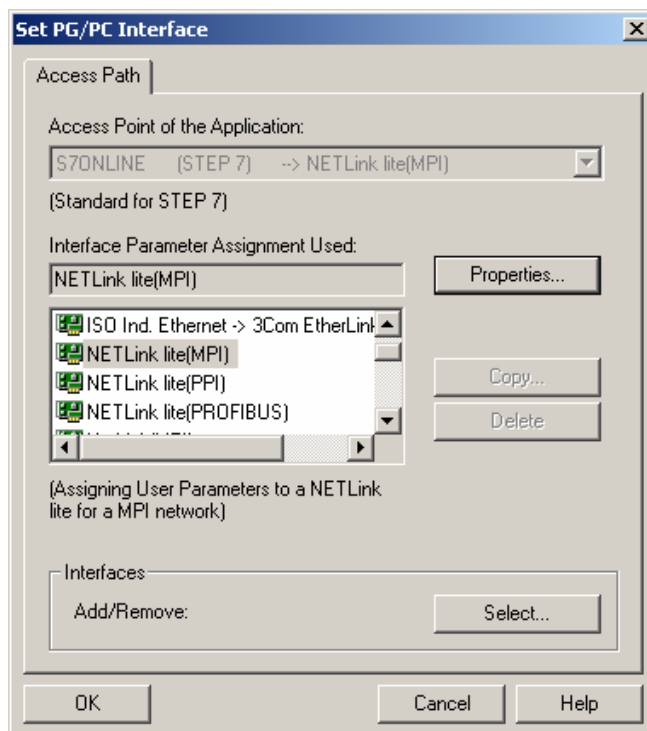
- Exit all programmes which communicate with the PLC.
- Open the system control via Start -> Settings -> Control panel.
- Double-click in the control panel on the symbol "software" now. The dialog window "Software" is displayed.
- Select the entry "NETLink-S7 NET" in the list of the installed programmes.
- Click on the button "add/remove" and follow the instructions.

6 Settings within STEP®7

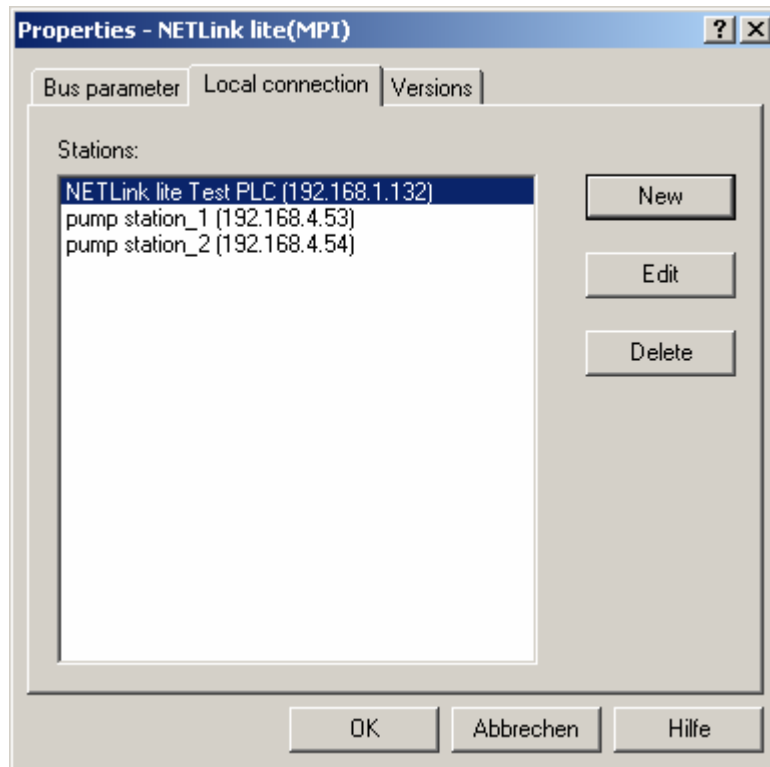
After successful installation and configuration of the NETLink lite driver, start your version of STEP®7. For configuration, select the menu item *"Options"* and *"Set PG/PC interface"*. As an alternative, you can use the menu item *"Set PG/PC interface"* in the Windows® Control Panel.



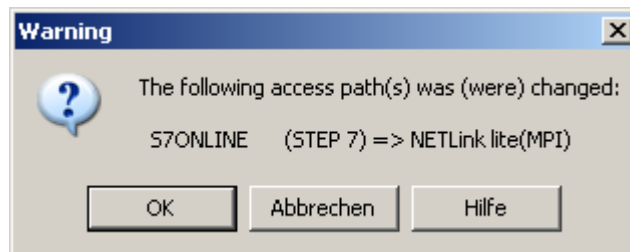
Now select the NETLink lite with the required bus profile as the access path.



Click the "*Properties*" button to select the already configured control or to create a new control, as described in ["Definition of access names to identify controllers"](#).



Mark the station that is to be used for online communication. Confirm the settings by clicking the "*OK*" button. When you close the "*Set PG/PC interface*" dialog box, a message is displayed indicating that you have changed the access path.

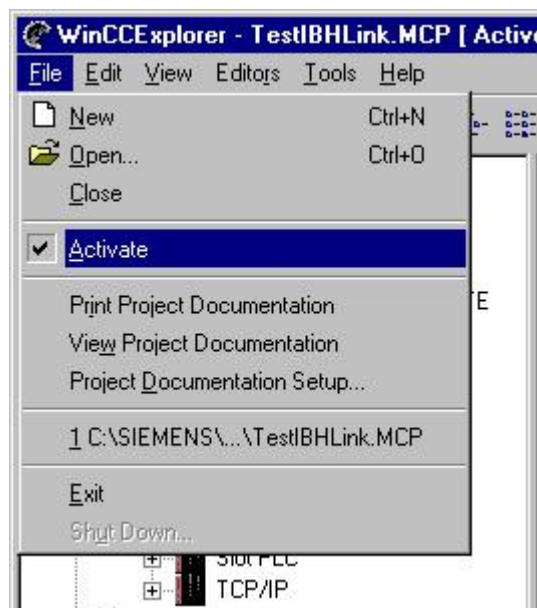


If you have connected a NETLink lite, you have successfully changed the access path.

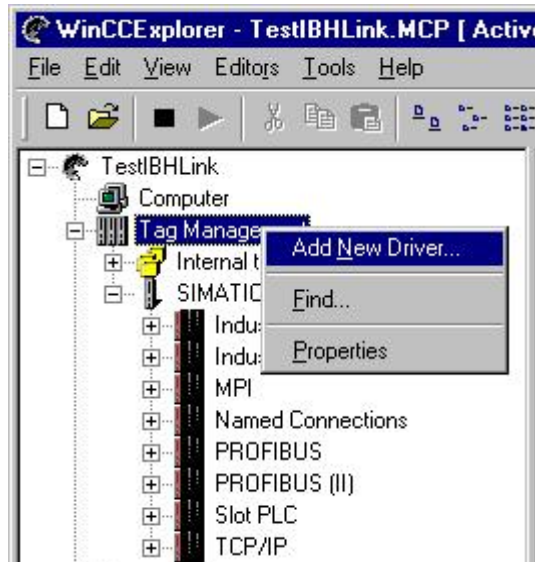
7 Settings within WinCC®

To be able to use the NETLink lite driver with WinCC®, please proceed according to the instructions below.

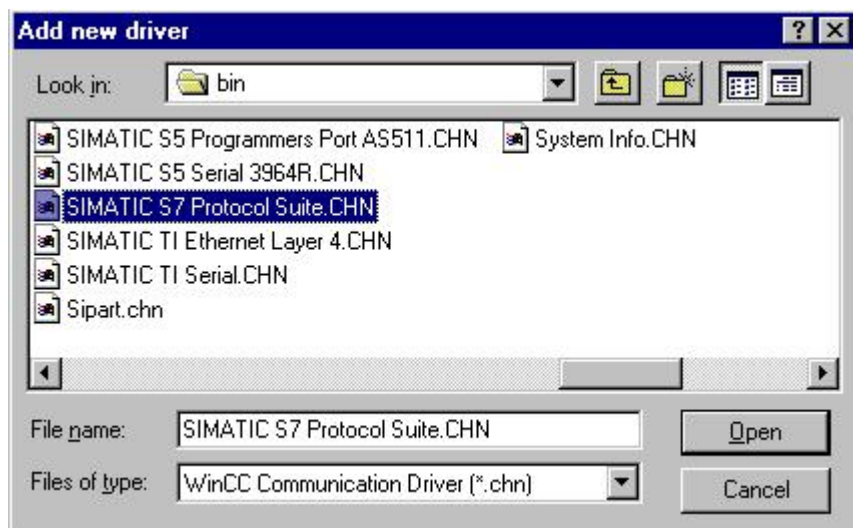
- Install WinCC® and check installation was successful.
- The next step is to install the NETLink lite driver.
- Configure the NETLink lite and define the PLC links.
- Open the *"Set PG/PC interface"* dialog box in the Control Panel and select *"NETLink lite (MPI)"*. Select the previously configured PLC from the Properties dialog box.
- Use programming software to make sure that the PLC can be accessed via the NETLink lite.
- Do not start the WinCC® visualization until you have a reliable connection with the controller. Then create a new project.
- To be able to make configuration changes, the project must not be activated. Make sure the project is deactivated.



- Select the menu item *"Tag Manager"* and click with the right mouse button. Select *"Add New Driver"* from the context menu.



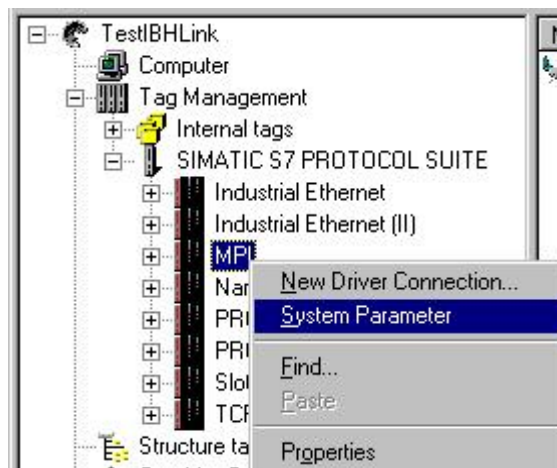
- Select file "*SIMATIC S7 Protocol Suite.CHN*" from the list of drivers.



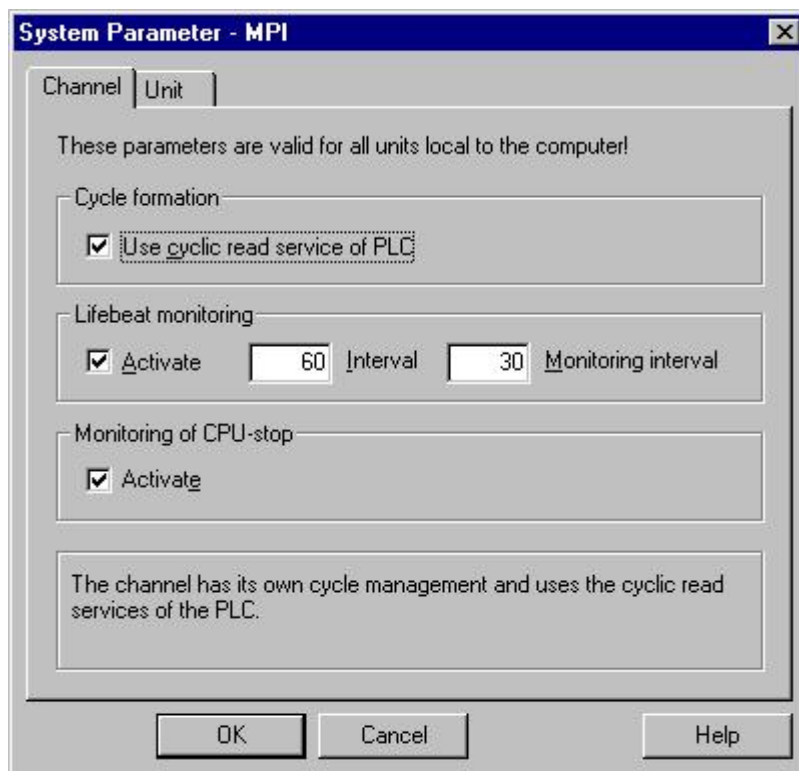
- After you have selected the driver, the following communication options appear in your WinCC® project. Communication is set via the "*MPI*" path.

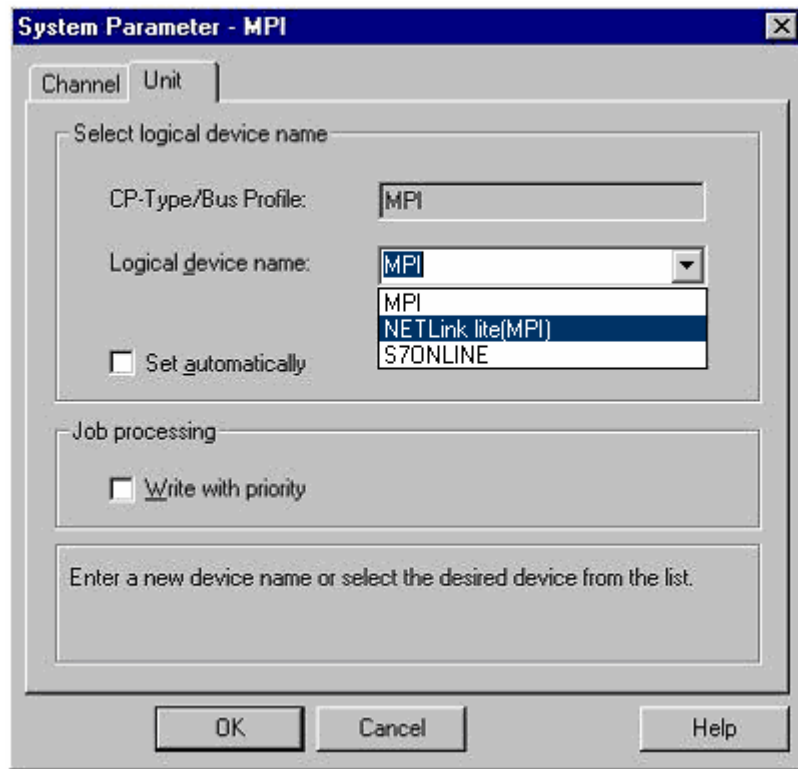


Before you create a controller, the communication parameters must be set. Select menu item "MPI". Now press the right mouse button and select menu item "System Parameter" from the context menu.

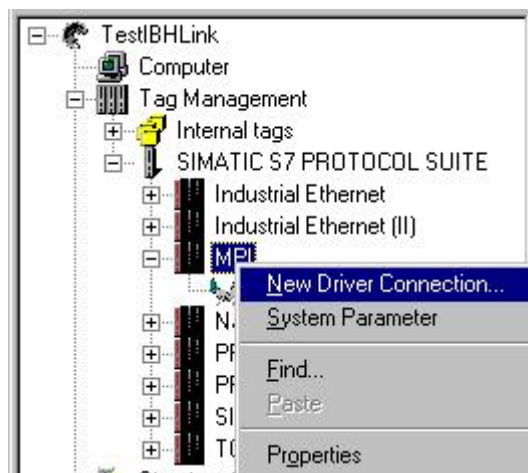


- In the dialog box that opens, make the settings shown in the two figures below. On the "Unit" tab card, you can now select the driver "NETLink lite". Please note that the assignment to the PLC is made with menu item "Set PG/PC interface" in the Windows® Control Panel.

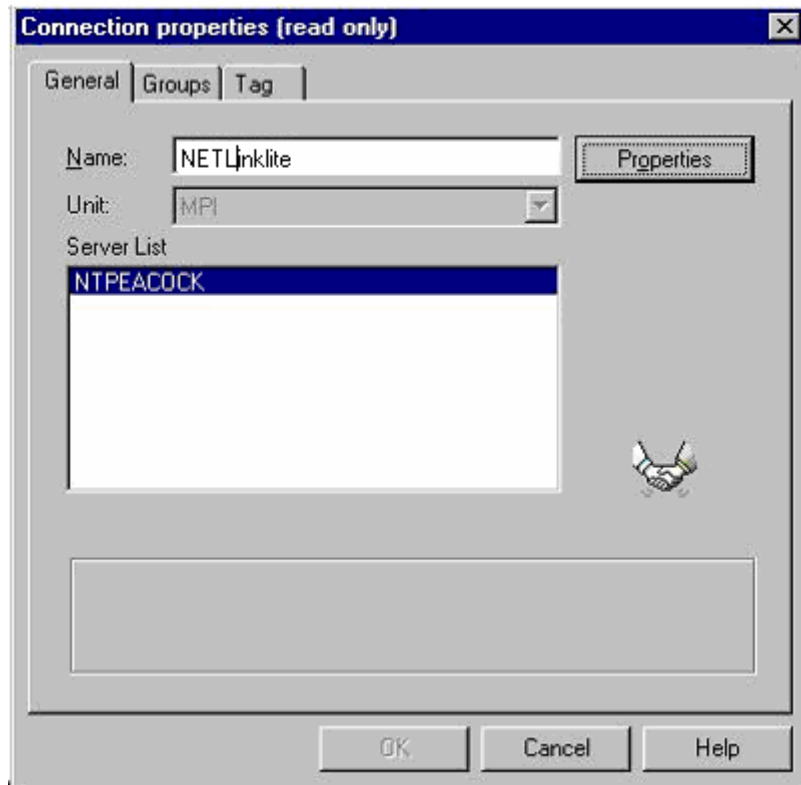




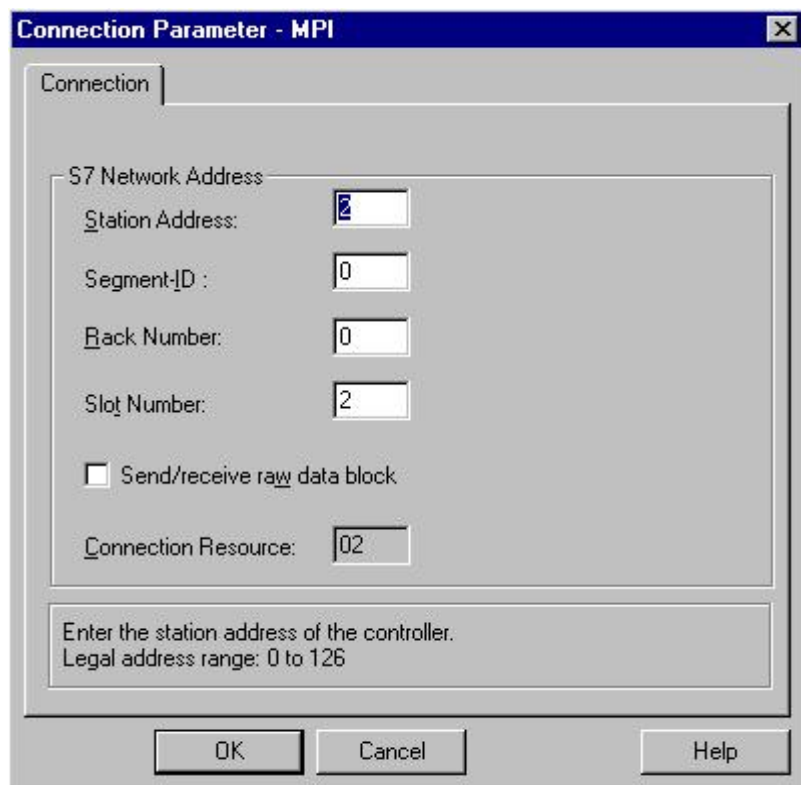
- To create a controller, select menu item "MPI" again. Now press the right mouse button and select menu item "New Driver Connection" from the context menu.



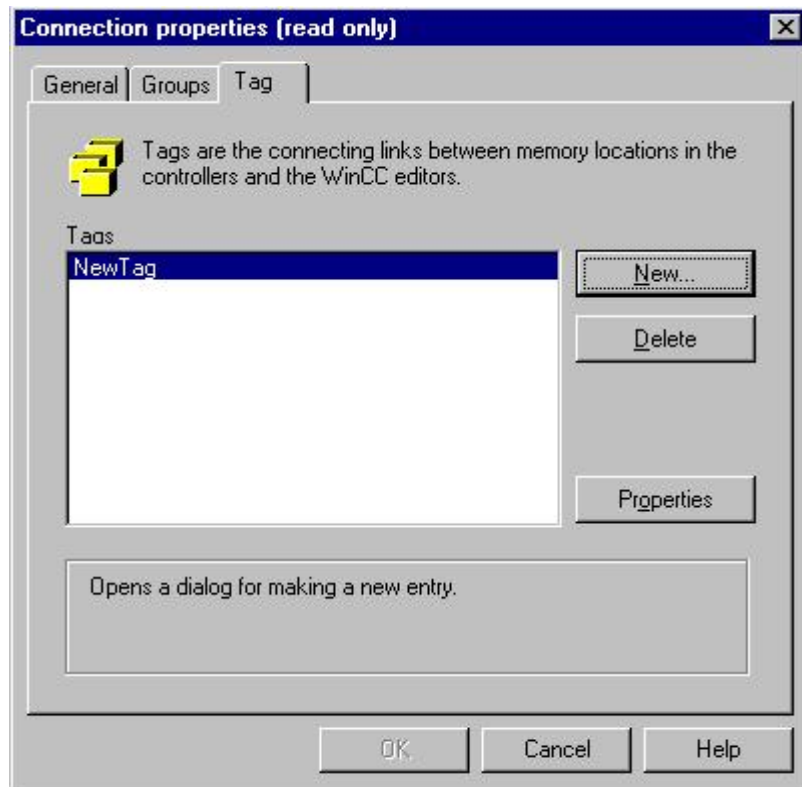
- You can now give the controller a name in the dialog box that then opens. WinCC® will later access the controller via this name.



- Once you have assigned the controller name, click the "Properties" button. You now have to enter the MPI address and rack/slot number of the CPU in the dialog box that then opens. In this example, a PLC is used on rack 0, slot 2 with MPI address 2. Please remember to deselect option "Send/receive raw data block".



- You can now create tags that can be processed in WinCC®. Save your project and check the settings again after reloading.



If you have any questions or comments, please contact our product support.

8 Troubleshooting

Q: Access to my controller is not working and the red LED is continuously lit.

A: If the red LED does not go off 6 seconds and then turn green after plugging in the NETLink lite , the NETLink lite is defective.

Q: I connected the NETLink lite directly to my PC/notebook but it doesn't work.

A: A direct connection between two NIC (network interface card) interfaces is not possible. You either need a cross-over adapter (Order no: 700-880-CROSS) or a hub/switch for connecting two TCP/IP terminal devices to each other.

Q: I get an error message when I access the controller.

A: Make sure you have set the IP address correctly in the driver configuration. Please also enter the command PING <IP address> at the DOS prompt to check whether the NETLink lite can also be accessed via the network.

Q: The setting dialog boxes are not appearing in the Simatic® Manager:

A: Make sure you had administrator rights during installation. Reboot your PC after installation. You need at least version 5.1 of the Simatic® Manager.

Q: During transmission with ProTool® I'm getting a message like "*Server is busy*" and it looks like ProTool® is hanging.

A: In that case, the timeout for NETLink lite is set too high. This message appears if the timeout is set to longer than 4 seconds.

Q: In the setting dialog box of the STEP®7 software I can't open any properties for the NETLink lite driver.

A: Pathnames were used during installation that contain blanks or special characters.

Q: When the adapter is plugged onto the Profibus, no online connection is possible.

A: Please read the timing parameters for Profibus from your STEP®7 project. Enter the read values into the advanced bus parameter settings via the "*Bus parameters*" button. If on-line access is still not possible, set a higher "*Ttr*" (target rotation time) both in the NETLink lite and on the CPU.

Q: The Starter[®] program has problems accessing a Micromaster drive.

A: When you request a "*control priority*" for the Micromaster[®] drive, please increase the failure monitoring from 20ms to 200ms and the application monitoring from 2000ms to 5000ms, so that the Starter[®] software remains operable.

9 Technical data

The NETLink lite is an Ethernet Gateway and is installed in a SUB-D housing. It consists of a complete field bus master together with a 10/100 Mbps Ethernet interface and is therefore a complete gateway that automatically detects whether a 10 or 100 Mbit network is connected.

Because it is a housing in a SUB-D connector shell it can be directly connected to the field bus connector of an MPI-capable device and connects it with the next switch or hub via a 2.5 meter long Ethernet cable.

If you want to connect the NETLink lite directly to the network card of the PC, you must use a cross-over cable (available as an accessory).

The power supply is connected directly via the MPI interface of the NETLink lite.

The device is configured via the Ethernet. Please start the NETLink lite software running on a PC connected to the same Ethernet segment as the NETLink lite.

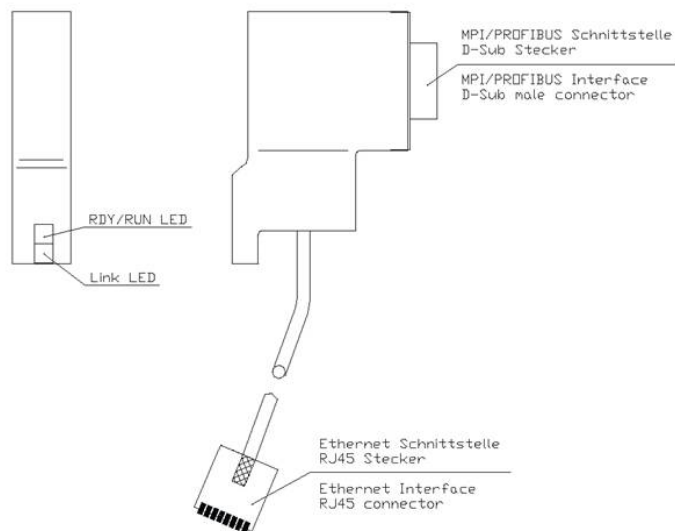
A diagnostic channel with the NETLink lite is established via TCP/IP. It works via a permanently defined port parallel with useful data transmission.

The configuration is stored in a FLASH in the NETLink lite and is therefore still available after a power failure.



Only connect the NETLink lite directly to a programming device/PC via a cross-over adapter!

9.1 Device drawing



9.2 MPI interface

Pin	Signal	Meaning
1	-	unused
2	DGND	data and supply voltage reference potential
3	RxD / TxD-P	receive / transmit data-P
4	-	unused
5	DGND	data and supply voltage reference potential
6	-	unused
7	VP	24 V power supply
8	RxD / TxD-N	receive / transmit data-N
9	-	unused housing / shield



Connecting an external power supply with reverse polarity will destroy the NETLink lite!

You do not require a connecting cable to connect the MPI interface of the NETLink lite to a Siemens S7 or another MPI capable device because the NETLink lite is directly connected to the device with the MPI interface.

No external power supply is required because the MPI interface provides a supply voltage.

The power supply of the NETLink lite does not have reverse polarity protection because of its compact dimensions!

9.3 Ethernet interface

For the Ethernet interface, an RJ45 connector and category 5 twisted pair cable is used.

The Ethernet cable consists of 4 twisted-pair conductors in which there is a shield around the entire cable and each pair of conductors in the cable is shielded again separately. This is called an STP cable (shielded twisted pair).

The transmission rate is 10 / 100 Mbaud.

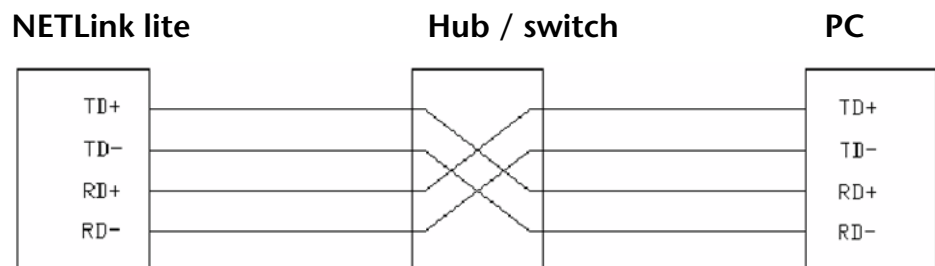
Connection with RJ45 connector

Pin	Signal	Meaning
1	TX+	transmit data
2	TX	transmit data
3	RX+	receive data
4	-	unused
5	-	unused
6	RX-	receive data
7	-	unused
8	-	unused

Medium 4 x 2 twisted-pair copper cable Cat 5 (10 / 100MBaud) / cable length max. 2.8m. Transmission rate 10 / 100 Mbaud.

The maximum cable length between two nodes according to IEEE802 (from the hub/switch to the programming device or PC) is 100m.

Connection via hub/switch



9.4 Checking the LED displays



Red LED continuously lit indicates a defect in the NETLink lite

RDY / RUN	Flashing (1 HZ)	Boot loader active
Red	Flashing fast (10 Hz)	Booting, firmware being initialized
RDY / RUN	On	Ready, IP address set
Green	Flashing non-cyclically Flashing fast (10 Hz)	No IP address yet or duplicate addresses in the network Firmware being updated
Link LED	On Off	There is a connection with the Ethernet No connection with the Ethernet

9.5 Technical data

Ethernet interface	
Transmission rate	10 / 100 Mbaud
Interface	10 / 100 Base-TX, isolated RJ45 connector
PROFIBUS interface	RS485, max. 12 Mbps, non-isolated
PROFIBUS interface	Acc. to EN 50170
Operating voltage	+24 V +/-5% / 50 mA
Operating temperature	0°C – 50°C
Degree of protection	IP 20
Dimensions (L x W x H)	65 x 48 x 16 mm
Weight	Approx. 140 g with cable

Notes